

**EXAMPLE 4. EXPANDED EFH CONSULTATION**

ESSENTIAL FISH HABITAT ASSESSMENT FOR THE EAST BRANCH  
WESTPORT RIVER

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Prepared By the Massachusetts Highway Department

# ESSENTIAL FISH HABITAT ASSESSMENT

## A. PROJECT DESCRIPTION

The purpose of this project is to replace the Hix Bridge over the East Branch Westport River. The existing bridge was built in 1938. It is a 11-span, 2-lane structure approximately 96.76 m (317.4 ft) long with a roadway width of 9.143 m (30 ft) and a sidewalk of 1.83 m (6 ft) wide. The existing bridge is composed of 51-mm (2-inch) bituminous concrete pavement over 178-mm (7-inch) reinforced concrete deck slab on eight (8) reinforced concrete T-beams supported by reinforced concrete piers/abutments with piles.

Massachusetts Highway Department investigation reveals that the concrete deck slab and the T-beams are seriously deteriorated, and the pier caps are structurally inadequate. The superstructure is in such poor condition that there are jersey barriers installed along and near the existing north sidewalk to limit the flow of traffic on the bridge. The existing bridges in need of complete replacement.

The proposed bridge replacement is a 6-span, 2-lane structure approximately 105 m (344.4 ft) with a roadway width of 10.5 m (34.4 ft) and a sidewalk of 2 m (6.6 ft). The proposed bridge is composed of 80 mm (3.2 in) bituminous concrete pavement over six (6) precast prestressed concrete box beams supported by reinforced concrete piers/abutments on drilled shafts that are socketed 1.2 m (3.9 ft) in the rock. The proposed abutments will be built at the back of the existing abutments to minimize the impacts of construction on the river environment, resulting in slightly longer bridge.

There is essentially no change in the roadway alignment and the hydraulic characteristic of the bridge, but there is a slight improvement to the roadway profile. Improvements in the stormwater management system include removal of scuppers in the bridge deck and treatment of the stormwater through deep sump catch basins, sediment traps, and grass swales.

### Summary of Essential Fish Habitat (EFH) Designation

#### 10' x 10' Square Coordinates:

Boundary	North	East	South	West
Coordinate	41° 40.0' N	71° 00.0' W	41° 30.0' N	71° 10.0' W

**Square Description (i.e. habitat, landmarks, coastline markers):** Atlantic Ocean waters within the square within Buzzards Bay affecting the following: south of Dartmouth, MA., and Westport, MA., from northwest Horseneck Beach to Quicksand Pond, including Alley's Pond inlet and Westport Harbor. Also affected are: Hicks Cove, Old Skunk, the Black Rocks, and the west and east branches of the Westport River.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Cod ( <i>Gadus morhua</i> )	X	X	X	X
Haddock ( <i>Melanogrammus aeglefinus</i> )	X	X		

Pollock ( <i>Pollachius virens</i> )				
Red hake ( <i>Urophycis chuss</i> )		X	X	X
Winter Flounder ( <i>Pleuronectes americanus</i> )	X	X	X	X
Windowpane Flounder ( <i>Scophthalmus aquosus</i> )	X	X	X	X
American Plaice ( <i>Hippoglossoides platessoides</i> )			X	X
Atlantic Herring ( <i>Clupea harengus</i> )			X	X
Bluefish ( <i>Pomatomus saltatrix</i> )			X	X
Long Finned Squid ( <i>Loligo pealei</i> )	n/a	n/a	X	X
Atlantic Butterfish ( <i>Peprilus triacanthus</i> )	X	X	X	X
Atlantic Mackerel ( <i>Scomber scombrus</i> )	X	X	X	X
Summer Flounder ( <i>Paralichthys dentatus</i> )	X	X	X	X
Scup ( <i>Stenotomus chrysops</i> )	X	X	X	X
Black Sea Bass ( <i>Centropristus striata</i> )	n/a	X	X	X
Surf Clam ( <i>Spisula solidissima</i> )	n/a	n/a	X	X
King Mackerel ( <i>Scomberomorus cavalla</i> )	X	X	X	X
Spanish Mackerel ( <i>Scomberomorus maculatus</i> )	X	X	X	X
Cobia ( <i>Rachycentron canadum</i> )	X	X	X	X
Sandbar Shark ( <i>Charcharinus plumbeus</i> )				X
Bluefin Tuna ( <i>Thunnus thynnus</i> )			X	
<b>Source:</b> National Marine Fisheries Service. "Summary of Essential Fish Habitat (EFH) Designation" posted on the internet at <a href="http://www.nero.nmfs.gov/STATES4/CapecodtoNH/41307100.html">www.nero.nmfs.gov/STATES4/CapecodtoNH/41307100.html</a>				

## B. EFH DESIGNATIONS

The East Branch Westport River has been identified as Essential Fish Habitat (EFH) for 21 species of fish. The species and life stages are shown below in Table 1.

## C. ANALYSIS OF EFFECT TO THE EFH

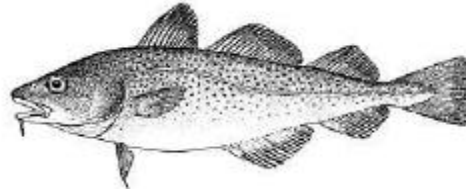
The study area is located in the East Branch Westport River, which is part of the Buzzards Bay estuary EFH. The East Branch Westport River is a tidal river that outlets to the Westport Harbor. The substrate mainly consists of silty mud and fine fluffy manure sediment. A large portion of the river has a shallow water depth with the minimum depth in the channels at approximately 2.1 meters (7 feet). The river is designated as an Outstanding Resource Area. According to sampling done from 5/99 to 9/99 and 5/00 to 9/00 by the Westport River Watershed Alliance and the Coalition for Buzzards Bay for a Water Quality Survey, summer temperatures in the East Branch Westport River in the vicinity of the bridge ranged from 15°C to 25.5°C and salinity ranged from 12 to 30 parts per thousand (*ppt*).

Construction activities in the waterway will include dredging to allow for the installation of drilled shafts to support the replacement bridge. Cranes will be set up on the land, and cofferdam structure will be constructed at each drilled shaft location. Excavation of soil will be performed by using augers. This impact is likely to be limited to increased turbidity and an increase in suspended solids. However, as discussed below under "Mitigation", measures are available to minimize potential project impacts. Shortly after project completion, water quality would be expected to return to a level consistent with the existing waterway. Impacts will include excavation of Land Under Water and the

installation of reinforced concrete drilled shafts. Approximately 185 square feet of impact to LUW and 476 cubic yards (364 cubic meters) of concrete will be placed below Mean High Water for the proposed drilled shafts. As it is not expected that the operation of a new bridge would impact the EFH, only impacts during the construction of the project are discussed. An analysis of EFH for each fish species and appropriate life stages listed above, including the likelihood of the species using the project area, is examined below.

### **ATLANTIC COD**

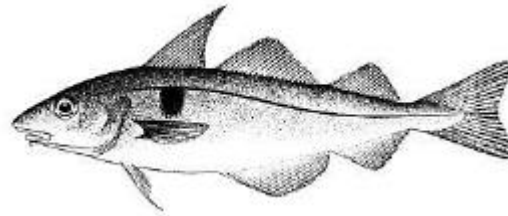
The East Branch Westport River is designated as EFH for eggs, larvae, juvenile, and adult stages of Atlantic Cod. The typical conditions for cod eggs are sea surface temperatures below 12°C, depths of less than 110 m (360 ft), and a salinity of 32-33 *ppt*. The eggs are



most often observed beginning in the fall, with peaks in the winter and spring. Generally, the following conditions exist where cod larvae are found: sea surface temperatures below 10°C water depths from 30-70 m (115-330 ft), and a salinity range from 32-33 *ppt*. Larvae are most often observed in the spring. Juveniles are found on substrates of rocks, pebbles, or gravel, and prefer water temperatures below 20°C, depths from 25-75 m (82-246 ft), and a salinity range of 30 -35 *ppt*. Adults are found in bottom habitats of sand and mud. They prefer water temperatures below 14°C, depths from 15-365 m (50-1200 ft), and salinities between 31 and 34 *ppt*. This is a slightly lower temperature and greater salinity and depth than is typical in the vicinity of the project site. Therefore, this species is not expected to be in the project area.

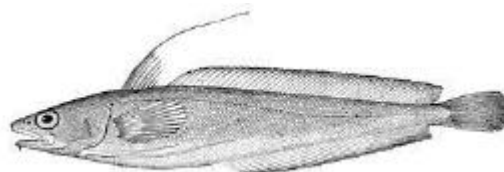
### **HADDOCK**

The East Branch Westport River is designated as EFH for haddock eggs and larvae. The typical conditions for haddock eggs are sea surface temperatures below 10°C, water depths from 50-90 m (165-300 ft), and salinity ranges from 34-36 *ppt*. The eggs are most often observed beginning

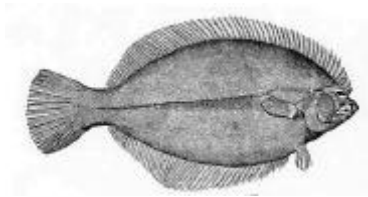


during the months from March to May, April being most important. Generally, the following conditions exist where haddock larvae are found: sea surface temperatures below 14°C water depths from 30-90 m (115-295 ft), and a salinity range form 34 – 36 *ppt*. Larvae are most often observed from January through July with peaks in April and May. This is a slightly lower temperature, greater salinity and depth than is typical in the vicinity of the project site. Therefore, this species is not expected to be in the project area.

### **RED HAKE**



The East Branch Westport River is designated as EFH for larvae, juvenile, and adult Red hake. The typical habitat is less than 200 m (665 ft), and salinities greater than 0,5 ppt. The larvae are most often observed from May through December, with peaks in September and October. The temperature preferred by the larvae during peak months is lower than the project area. Juveniles are found on shelly substrates, and prefer water temperatures below 16°C, depths of less than 100 m (330 ft), and a salinity range of 31-33 ppt. This is a slightly lower temperature and greater salinity than is typical in the vicinity of the project site. Additionally, the substrate of this part of the East Branch Westport River is sand and mud, not the shelly substrate juvenile red hake prefer. Adults, however, are found in bottom habitats of sand and mud, although they prefer water temperatures below 14°C, depths from 15-365 m (50-1200 ft), and salinities between 31 and 34 ppt, a more open water environment than the project area. This is a slightly lower temperature, greater salinity and depth and substrate preference than is typical in the vicinity of the project site. Therefore, this species is not expected to be in the project area.

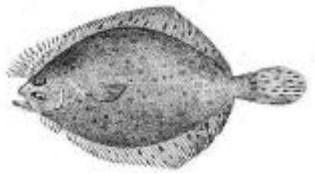


#### **WINTER FLOUNDER**

The East Branch Westport River is designated as EFH for eggs, larvae, juvenile, and adult Winter Flounder. Habitat and environmental conditions in the East Branch Westport River are

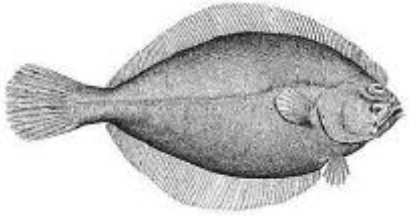
typical for all life stages of Winter Flounder. Spawning adults and eggs are often observed from February to June, and larvae are observed from March to July. Eggs, juveniles, and adults prefer bottom habitats of mud or fine grained sand, and larvae are found in both bottom habitats and in the water column. Winter Flounder may be found in the project area.

#### **WINDOWPANE FLOUNDER**



The East Branch Westport River is designated as EFH for eggs, larvae, juvenile, and adult Windowpane Flounder. Habitat and environmental conditions in the East Branch

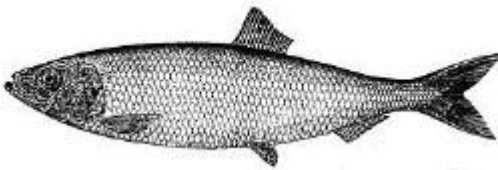
Westport River are typical for all life stages of Windowpane Flounder. Spawning adults, eggs, and larvae are often observed from February to November or December, with peaks in May and October. Eggs and larvae are concentrated in the mid to upper water column, and juveniles and adults prefer bottom habitats of mud or fine-grained sand. Windowpane Flounder may be found in the project area.



American Plaice. Juveniles are found on bottom habitats with fine-grained sediments or a substrate of sand and gravel, and prefer water temperatures

### **AMERICAN PLAICE**

The East Branch Westport River is designated as EFH for juvenile and adult below 17°C, depths from 45-150 m (145-500 ft), and a wide range of salinities. This is a greater depth and lower temperature than is typical in the vicinity of the project site.



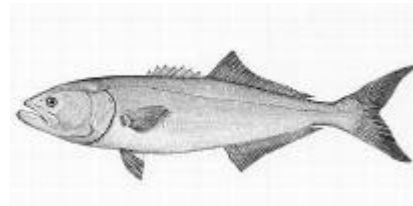
Therefore, this species is not expected to be in the project area.

### **ATLANTIC SEA HERRING**

The East Branch Westport River is designated as EFH for juvenile, and adult Atlantic Sea Herring. Juveniles and adults prefer pelagic waters and bottom habitats with water temperatures below 10°C, water depths of 10-135 m (33-440 ft) respectively, and salinity ranges of over 26 ppt. The preferred water temperatures are lower than the study area, and the depths are greater. Thus, this species is not expected to be in the project area.

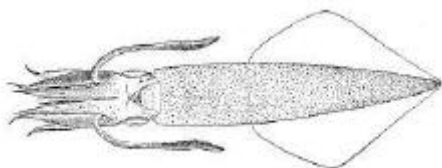
### **BLUEFISH**

The East Branch Westport River is designated as EFH for juvenile and adult Bluefish. Bluefish often migrate to estuaries in the summer months, between April (adults) or May (juveniles) and October. Bluefish may be present in the project area.



### **LONG FINNED SQUID**

The East Branch Westport River is designated as EFH for juvenile (pre-recruits) and adult (recruits) Long Finned Squid. They are typically found in pelagic waters over the Continental

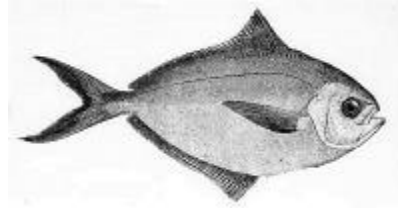


Shelf and can be collected from shore to 300 m (1000 ft) with temperatures between 4°C and 27°C. According to NOAA Technical Memorandum NMFS-NE-146 (figure 5), the Long Finned Squid has been collected in Buzzards Bay. This Memorandum also states off Massachusetts, most pre-recruits were found in 10-15 m (30-50 ft) of water at

temperatures of 10-13°C in spring and 15-20°C in autumn. This is a lower temperature and greater depth than is typical in the vicinity of the project site. Therefore, this species is not expected to be in the project area.

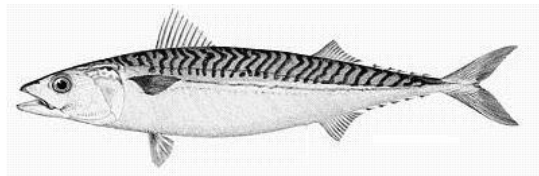
### **ATLANTIC BUTTERFISH**

The East Branch Westport River is designated as EFH for larvae, juvenile, and adult Atlantic Butterfish. Butterfish are usually found at depths of 10-365 m (33-1200 ft, juveniles and adults) and 10-1800 m (33-6000 ft, larvae), greater than the study area. Thus, this species is not expected to be in the project area.

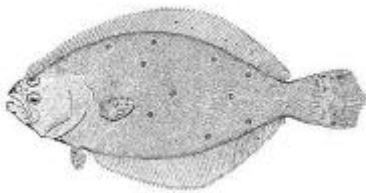


### **ATLANTIC MACKEREL**

The East Branch Westport River is designated as EFH for eggs, larvae, juvenile and adult Atlantic Mackerel. Generally, eggs are collected from shore to 15 m (50 ft) with temperatures between



5°C and 23°C. The eggs are most often observed beginning in the fall, with peaks in the winter and spring. Larvae prefer depths between 10 and 130 m (33 and 425 ft). Juveniles can be collected from shore to 320 m (1,050 ft) and temperatures between 4°C and 22°C. Adults Juveniles can be collected from shore to 380 m (1,250 ft) and temperatures between 4°C and 16°C. Atlantic Mackerel are typically a pelagic species, found over the Continental Shelf but do enter estuaries. According to NOAA Technical Memorandum NMFS-NE-141 for the Atlantic Mackerel, adult mackerel are not found in the Buzzards Bay estuary, and eggs, larvae, or juveniles are rarely found in the estuary. Therefore, this species is not expected to be in the project area.



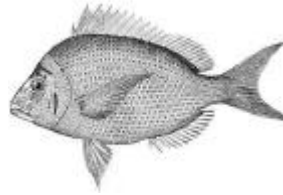
### **SUMMER FLOUNDER**

The East Branch Westport River is designated as EFH for larvae, juvenile, and adult Summer Flounder. Eggs are most commonly collected between 30-360 ft and most abundant 9 miles

off shore of New Jersey and New York. Larvae are most abundant approximately 12-50 miles from shore at depths of 100-750 m (30-230 ft), from September to February. Although sometimes found in estuaries, it is unlikely that larval summer flounder would be found in abundance in the study area, based on the distance from shore and depth preferences. Juvenile Summer Flounder are found in estuaries, including mudflats, with water temperatures greater than 22°C and salinities of 1-30 ppt. Adults migrate to shallow coastal and estuarine environments during the summer and move offshore to warmer waters in the winter. Juveniles and adults may be present in the project area.

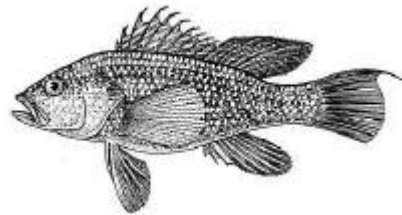
### **SCUP**

The East Branch Westport River is designated as EFH for eggs, larvae, juvenile, and adult Scup. Scup of all life stages are found in estuaries during the spring and summer. All life stages prefer salinities greater than 15 *ppt*. Eggs and larvae are found in water temperatures of 12.8-22.8°C, and juveniles and adults are found in water temperatures of greater than 7°C. Eggs and larvae are pelagic, with a gradual transition to the demersal adult stage. Adults will also use structured areas for feeding and shelter. Juveniles and adults may be present in the study area.



### **BLACK SEA BASS**

The East Branch Westport River is designated as EFH for juvenile and adult Black Sea Bass. Juveniles and adults are found in estuaries during the spring and summer, in water temperatures above 6°C and salinities greater than 18 *ppt*. They generally prefer rough, shelly substrates, and can be found in natural and man-made structured habitats, such as bridge piers. Black Sea Bass may be found in the study area but unlikely.



### **SURFCLAMS**

The East Branch Westport River is designated as EFH for juvenile and adult Surfclams. According to NOAA Technical Memorandum NMFS-NE-142 the greatest concentrations of Surfclams are usually found in well-sorted, medium sand, but they may also occur in fine sand and silty fine sand. They are most common in depths of 8-66 m (25-215 ft) and prefer salinities higher than 28 *ppt* in the field. This is a greater depth and salinity, and substrate preference than is typical in the vicinity of the project site. Therefore, this species is not expected to be in the project area.

### **KING MACKEREL**



The East Branch Westport River is designated as EFH for eggs, larvae, juvenile, and adult King Mackerel. However, EFH for King Mackerel includes sandy shoals of capes

and offshore bars, rocky bottom and barrier island oceanside waters from the surf to the shelf break zone. King Mackerel is a coastal migratory pelagic species, and thus would not be expected in the shallow, moderately saline East Branch Westport River. This species is not expected to be in the project area.

### **SPANISH MACKEREL**

The East Branch Westport River is designated as EFH for eggs, larvae,





juvenile, and adult Spanish Mackerel. sandy shoals of capes and offshore  
Like the king mackerel, EFH includes  
bars, rocky bottom and barrier island oceanside waters from the surf to the shelf break  
zone. Spanish Mackerel is also a coastal migratory pelagic species, and thus would not be  
expected in the shallow, moderately saline East Branch Westport River. This species is  
not expected to be in the project area.



### **COBIA**

The East Branch Westport River is designated as EFH for eggs, larvae, juvenile, and adult Cobia. Cobia is also a coastal migratory pelagic species. EFH includes sandy shoals of capes and offshore bars, rocky bottom and barrier island oceanside waters from the surf to the shelf break zone, as well as high salinity bays, estuaries, and eelgrass beds. It is not expected that Cobia would be found in the project area of the East Branch Westport River which has shallow moderately saline waters. This species is not expected to be in the project area.

### **SANDBAR SHARK**

The East Branch Westport River is designated as EFH for adult Sandbar Sharks. Sandbar Shark larvae are found in shallow coastal waters, from the coast to the 50 m isobath, from Nantucket, MA south to Miami, FL. This species is not expected to be in the project area.



### **BLUEFIN TUNA**

The East Branch Westport River is designated as EFH for juvenile bluefin tuna. Bluefin tuna juveniles are a migratory pelagic (i.e. open water) species. This species is not in the project area.



In summary, fish species and life stages that may use the project site waters include Winter Flounder (eggs, larvae, juveniles, and adults), Windowpane Flounder (eggs, larvae, juveniles, and adults), Bluefish (juveniles and adults), Summer Flounder (juveniles and adults), Scup (eggs, larvae, juveniles, and adults), and Black Sea Bass (juveniles and adults).

#### **D. PROPOSED MITIGATION**

Sediment controls will be installed in the appropriate locations prior to any construction. Cofferdams will be constructed at each of the proposed drilled shaft locations. The excavation of the area will be performed with augers.

#### **CONCLUSION**

The project area is not an optimal EFH for the majority of the above species due to unsuitable depth, temperature, salinity, or substrate. While there are both juvenile and adult fish species that might use the waters in the study area (e.g., Winter Flounder, Windowpane Flounder, Bluefish, Summer Flounder, Scup, and Black Sea Bass), these fish are mobile and would avoid areas of construction. If present at all, most of these species would only use the study area waters during the spring and summer, following warmer waters offshore in the winter. Eggs and larvae of Windowpane Flounder and Scup, and larvae of Winter Flounder are planktonic (i.e. float in the water column) and would likely be unaffected by construction, as would planktonic prey species. Winter flounder eggs are demersal, and many prey species are benthic infaunal and epifaunal invertebrates. However, construction for the project is in a relatively small area of the East Branch Westport River. Additionally, as the site is in the East Branch Westport River where water quality has been seriously impacted due to the land use of the surrounding area, it is unlikely that the project area is a nesting area for fish species or an important nursery for eggs and larvae.